THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

DOCKET NO. 2021-324-WS

IN RE:	Application of Kiawah Island Utility, Incorporated to File Proposed Changes in Rates, Charges, Classifications and/or Regulations for Water and Sewer Service.	)))))	**REBUTTAL TESTIMONY OF DOUGLAS H. CARLISLE**

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Douglas H. Carlisle. My principal place of business 1104 Gregg, Street, Columbia, South Carolina (29201).

Q. WHAT IS YOUR CURRENT POSITION?

A. I am an independent consultant.

Q. PLEASE STATE YOUR PROFESSIONAL BACKGROUND.

A. I was employed as an Economist for the Office of Regulatory Staff ("ORS") for approximately thirteen years. In that job, I analyzed rate of return data and other financial or economic data and testified before the Public Service Commission in rate cases. Before my employment with the ORS, I worked for the Economic Research Section of the State Budget and Control Board, where I was responsible for preparing economic impact statements for the General Assembly. I also gave confidential advice to members of the General Assembly regarding policy options under consideration. I tracked and estimated the state's K-12 educational spending formula, created an index for higher education utility costs, and estimated the average teacher salaries for the Southeast region. I previously held

positions as a legislative staff member, taught at Midlands Technical College, and was an auditor for the U.S. General accounting Office in Washington, D.C. My resume is attached as Exhibit DHC-A

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I have a Ph.D. in Government and Foreign Affairs, and a Master of Arts degree in Government and Public Administration from the University of Virginia. I was a teaching fellow, a DuPont Fellow, and a Colgate Darden Fellow at U.Va. I also have a Bachelor of Arts degree in Political Science from Brown University.

Q. HAVE YOU EVER TESTIFIED BEFORE THIS COMMISSION?

A. Yes. I provided cost of capital and rate of return testimony on behalf of the Office of Regulatory Staff in twenty-eight cases, many of which were brought by water or wastewater utilities, before my retirement in 2018. A list of cases in which I have testified is attached as Exhibit DHC-B to my testimony.

Q. HAVE YOU HAD TRAINING IN ESTIMATING THE APPROPRIATE RATE OF RETURN OR COST OF CAPITAL FOR A REGULATED UTILITY?

A. Yes. I am a Certified Rate of Return Analyst, which required passing a professional examination and maintaining professional training by attending the annual Forum of the Society of Utility Regulatory Analysts. I have attended the Forum for ten years. This Forum is a day-and-a-half of seminars on the whole gamut of topics related to Return on Equity ("ROE") put on by experts and seasoned practitioners. I have also attended the week-long "Camp NARUC" (the Annual Regulatory Studies Program conducted at Michigan State University) in three different years, completing all three levels of the program, which covers all aspects of utility ratemaking. I maintained the full number of

hours training required for staff at the South Carolina Office of Regulatory Staff during my tenure there.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I have been retained by Kiawah Island Utilities, Inc. ("KIU" or "Company") to testify in this matter.

II. PURPOSE OF TESTIMONY AND SUMMARY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I am testifying to respond to the testimonies of Mr. Aaron L. Rothschild, who testified for the Department of Consumer Affairs ("DCA") and Mr. David J. Garrett, who testified for the ORS.

Q. PLEASE SUMMARIZE THE ORGANIZATION OF YOUR TESTIMONY.

A. I first respond to Mr. Rothschild's recommended capital structure and cost of debt. Next, I respond to the recommendations of Mr. Rothschild and Mr. Garrett regarding return on equity ("ROE"). Finally, I make some observations regarding the issue of whether operating margin or rate of return should be used to determine the Company's rates.

Q. WHAT IS YOUR OPINION REGARDING KIU BRINGING THIS CASE AS A MARGIN CASE, AS OPPOSED TO A RETURN-ON-RATE-BASE CASE?

A. I have no opinion, because, as Mr. Rothschild observes, it is a legal matter. I understand that KIU is not prohibited from bringing its case in this fashion.

Q. PLEASE SUMMARIZE YOUR RECOMMENDED COST OF CAPITAL SHOULD THE COMMISSION SET KIU'S RATES BASED ON RATE OF RETURN.

A. I recommend the Company be allowed to earn an overall return of 7.11% based on a ROE of 9.35%, a cost of debt of 4.57%, and a debt-to-equity ratio of 46.81%-53.19%.

III. CAPITAL STRUCTURE AND COST OF DEBT

Q. PLEASE SUMMMARIZE THE POSITIONS OF MR. GARRETT AND MR. ROTHSCHILD REGARDING CAPITAL STRUCTURE AND COST OF DEBT.

A. Based on a proxy group, Mr. Rothschild recommends a capital structure consisting of 50.14% debt and 49.86% equity, and a cost of debt of 3.39%. Mr. Garrett accepts as reasonable the Company's actual capital structure consisting of 46.81% debt and 53.19% equity, and its actual cost of debt of 4.57%.

Q. DO YOU HAVE AN OPINION ON KIU'S CAPITAL STRUCTURE?

A. Strictly speaking, KIU did not propose a Capital Structure, but it used one for responding to Audit Information Requests, so a Capital Structure has been presented. KIU's Capital Structure consisting of 46.8% Long-Term Debt stays below the "yellow zone" or "red zone." The "yellow zone" is Long-Term Debt between 55% and 60% and the "red zone" is Long-Term Debt over 60%. For companies paying dividends, there are danger zones, albeit less intense ones, for being too high in Equity because investors may refuse to invest in a company that misses a dividend. Unfailing payment of dividends, especially increasing dividends is a hallmark of a financially strong company. I concur with Mr. Garrett, who accepts a 46.8% Debt Ratio as "close enough to be reasonable under the circumstances," (p. 63).

Q. IS KIU'S PROPOSED DEBT RATE REASONABLE?

A. While I do not have direct knowledge of the alternatives, I note the Commission has approved the cost of debt currently requested by KIU's in its previous case before the Commission, Docket No. 2018-257-WS. In that case, ORS filed testimony in support of the debt costs, noting, "Customers have and will continue to benefit from the Company's election, with parent company SouthWest Water Company ("SWWC"), to replace a variable rate construction loan with a fixed rate intercompany loan, stabilizing the burden of interest expenses in a rising interest rate environment."[1]

IV. RETURN ON EQUITY

Q. WHAT ROE DO YOU THINK IS APPROPRIATE FOR KIU?

A. I recommend 9.35%. Applying standard methods, my range would be between 7.74% and 9.60%, but because I expect economic factors to make the two ends of my range converge over the next year or two, I recommend an inner range between 8.43% and 9.35% (Exhibit DHC-1). I favor the top end of the inner range, 9.35%, over 8.43%, because a market correction is already underway and our economic circumstances are leading us out of a period of very low interest rates and inflation. I will further lay out my reasoning later in this testimony. My range and Mr. Garrett's range of 6.43%-8.44% overlap, although mine does not go nearly as low as the bottom end of his. In contrast, there is less overlap with Mr. Rothschild's range of 6.78%-8.16%, but there is some. My assessment of indicated ROE is solely for comparative purposes, however, since this is a case brought on operating margin.

[1] Docket 2018-257-WS, Direct Testimony of Matthew P. Schellinger II, page 7.

For summary purposes I have prepared the following comparative table of results.

Witness	DCF	CEM	CAP-M
Carlisle	7.74%	9.11%	9.60%
Garrett	8.44%	Not used	6.43%
Rothschild	5.75%-8.27%	Not used	6.78%-8.16%

Mr. Garrett has a point recommendation of 8.44% and Mr. Rothschild has a point recommendation of 7.47%.

A. RESPONSE TO ROE ANALYSIS OF MR. ROTHSCHILD

Q. ARE THE ROE DECISIONS MR. ROTHSCHILD CITES REPRESENTATIVE OF RECENT DECISIONS?

A. No. Mr. Rothschild cites five recent public utility commission decisions, but his list does not reflect the regulatory universe.[2] Below is a table from Regulatory Research Associates showing average ROEs awarded by public utility commissions:

[2] Rothschild Direct, pp. 10-11.

Water utility rate case decisions

Year	Return on rate base (%)	Return on equity (%)	Common equity/ total cap (%)	Rate cases completed
2010	7.99	10.18	48.47	31
2011	7.90	10.04	46.92	9
2012	7.91	9.90	48.53	23
2013	7.67	9.72	48.34	12
2014	7.60	9.59	49.69	17
2015	7.55	9.76	50.41	13
2016	7.50	9.71	50.52	14
2017	7.33	9.56	47.34	11
2018	7.46	9.45	52.41	21
2019	7.26	9.63	51.13	11
2020	6.93	9.04	49.75	8
2021	6.97	9.46	51.96	10

As of Feb 14, 2022.
Source: Regulatory Research Associates, a group within S&P Global Market Intelligence

While "black box" decisions do not appear in this table, it is also true that a couple of commissions – Virginia and Pennsylvania -- that recently had such cases have laid out guidance for ROEs of 9.3% and 9.8% for water companies. I am not saying this Commission should mechanically follow decisions in other states, but I mention these rulings to note evidence of higher ROE decisions and trends.

Q. DO YOU AGREE WITH MR. ROTHSCHILD'S RECOMMENDATIONS REGARDING ROE FOR KIU?

A. No. While Mr. Rothschild makes some valid points, his approach to both the Discounted Cash Flow ("DCF") method and the Capital Asset Pricing Model ("CAP-M") method make his results problematic.

Q. DO YOU AGREE WITH MR. ROTHSCHILD'S GENERAL APPROACH?

A. I agree with the idea that there is a tradeoff between risk and reward and that assessing that tradeoff should be based upon market forces. His approach, however, does not filter random variation out of calculations nor is it neutral. Instead, it is downwardly biased. The ultimate source of the problem with his analysis has to do with DCF and CAP-M as long-term approaches. The focus upon detailed current observations, which fluctuate, as he acknowledges, detracts from considering the economic motivations of investors, who seek net return commensurate with their tolerance of risk and will invest elsewhere or not at all if they do not find those returns. Managers, too, must attract those investors. An exclusive focus on book value, while accurate with respect to valuation, ignores the inputs to growth.

A major problem with Mr. Rothschild's approach is that it is based on some notion of the intrinsic value of an enterprise. That approach is appropriate for valuation, and one might wish that investors behaved based upon it, but they often do not. Competing outlooks cloud any approach based upon a presumed direct link between return and market behavior. Some investors, for example, may believe in technical analysis, which tries to predict what other investors will do, often within a very short period of time. Whatever the approach, the large increase in the stock prices of water companies over the past several years cannot be explained by anticipation of returns on book value.

1. MR. ROTHSCHILD'S DCF

Q. ARE THERE PROBLEMS WITH MR. ROTHSCHILD'S DCF?

A. Yes. There are problems with the data he emphasizes and with the consistency of his approach. He overemphasizes book value, inappropriately uses Market-to-Book ratios in

his data and calculations and takes a contradictory stand regarding the sources of his data. I will address each problem.

Using book value alone, directly linked to ROE, creates perverse incentives. If a company decided to increase its assets and its stock price remained the same, then the ratio between the company' book value and shares of stock would fall, and Mr. Rothschild would recommend a lower return in the future under his Constant Growth method. Book value, while useful, may return to lag behind earnings, since many assets do not produce returns immediately and, in any event, are subject to the vagaries of accounting. His use of transitory data, moreover, may not represent long-term trends in the relationship between book value and returns. In the case of Market-to-Book ratios, Mr. Rothschild's analysis uses them in such a way that even short-term trends are misrepresented.

Using a constant Market-to-Book ratio for a "Non-Constant" DCF analysis poses a logical conflict and inappropriately results in a biased, inaccurate result. Contrary to his claim, the approach is not "market-based" because the real market does not have such a constant ratio. There may be such a ratio that applies in the very long term, but a constant ratio does not exist in the medium term or short term.

Mr. Rothschild is also quite inconsistent in his position about analysts' estimates of future financial data. On the one hand he says they are unreliable, but, on the other, he cites some of them approvingly, and uses others throughout his analysis. Similarly, he acknowledges the volatility of markets, but uses a frozen Market-to-Book ratio and spot data.

Q. DO YOU DISAGREE WITH THE USE OF THE FORMULA: K = D/P + br + sv?

A. I do not regard it as entirely unacceptable, but there are some problems with using return on book value that need to be considered.

Q. WHAT ARE YOUR CONCERNS?

A. They are several. The formula relies on the following definitions:

K = cost of equity (COE);
D = Dividend; and
P = Market price of stock at time of the analysis
g = the growth rate, where g= br + sv;
b = the earnings retention rate;
r = return on common equity investment (referred to below as "book equity");
v = the fraction of funds raised by the sale of stock that increases the book value of the existing shareholders' common equity; and
s = the rate of continuous new stock financing shareholders' common equity.

My first concern is that book value tends to be a lagging indicator of growth, the "g" term for which the "br + sv" is supposed to represent. Second, using "anticipated return on book equity expectation" for "r" does not remedy this problem. Third, book value itself may fluctuate for reasons unrelated to return or "external financing", the "sv" factor, such as when and how assets are depreciated. Fourth, although stock analysts might offset some of these concerns when they evaluate stocks, Mr. Rothschild declares that he does not trust them: "My results are not as influenced by overly optimistic analysts' forecasts as would have been the case had I merely used analysts' five-year earnings growth rate forecasts" (p. 55). Yet, he has faith in analysts' predictions of Dividends per Share ("DPS") and Book Value per Share ("BVPS") because he uses their forecasts to arrive at his DCF result (Exhibit ALR-3).

Q. IS THERE A PROBLEM IN USING ANALYSTS' PREDICTIONS?

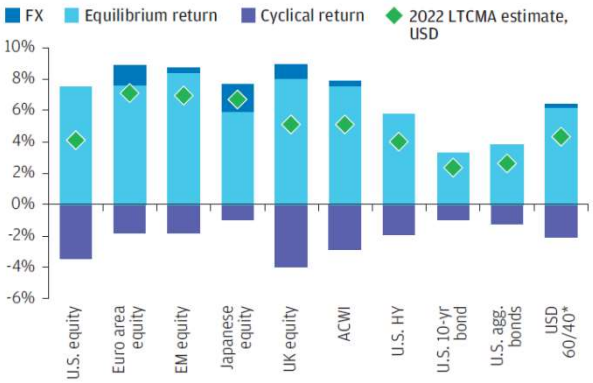
A. There is no problem in using analysts' estimates because they influence investors' behavior. I do agree that analysts tend to have upwardly biased estimates for future stock statistics, but the estimates are less so in this case, and they may even be overly pessimistic. The problem is Mr. Rothschild's inconsistency. Early in his testimony Rothschild states that company witnesses tend to use "expert forecasters" whom he believes are biased upward (p.14). Only a few pages before, however, he cites the "U.S. Equity Return Expectations" of Duff & Phelps, Horizon Actuarial Services, J. P. Morgan Chase, and Charles Schwab (Rothschild, p.9, Table 4). All of these numbers came from "expert forecasters." The high number in the table, 8%, by Duff & Phelps is the most recent one and that is interesting since Duff & Phelps has been producing the publication, the Stocks, Bond, Bills and Inflation yearbook, containing long-term total returns from investment, that many ROE witnesses use in CAP-M analysis. Mr. Rothschild cites Duff & Phelps in this instance but eschews their data in another.

Since the lowest number Mr. Rothschild cites was from J.P. Morgan Asset Management, and since he states that his method is the one J.P. Morgan uses, it is instructive to see what J.P. Morgan has published. In its *2022 Long-Term Capital Market*

Assumptions, the total expected returns for 2022 is around 4%, but the ten-year total returns are above 10% and heading higher[3]:

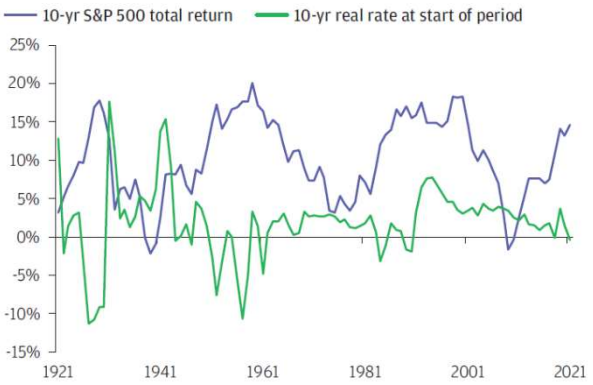
Ten-year annualized total returns were 2.3% higher when starting in a negative real rate environment

EXHIBIT 6A: CYCLICAL VS. STRUCTURAL RETURN DRIVERS FOR KEY EQUITY AND OTHER ASSETS



Source: Bloomberg, Datastream, Haver, J.P. Morgan Asset Management; data as of October 2021.

EXHIBIT 6B: 10-YR TOTAL EQUITY RETURNS WERE ONLY NEGATIVE TWICE IN THE LAST 100 YEARS, AND NEVER WHEN STARTING REAL RATES WERE NEGATIVE



Source: Bloomberg, Datastream, Yale University, Robert J. Shiller, J.P. Morgan Asset Management; data as of September 2021.

[3] John Bilton, Patrik Schöwitz, Anthony Werley et al., "The Evolution of Market Structure: Managing illiquidity risk across public and private markets," 2019 Long-Term Capital Market Assumptions, J.P. Morgan Asset Management, October 2018.

[4] Compared with last year's assumptions, it's notable that equity valuations are lower, despite a strong year of performance. This speaks to the strength of the earnings recovery. However, this has pushed up margins, which are now a key detractor in our equity forecasting.

Without more background on these numbers, one could conclude that water companies should earn somewhere around 6% ROE over the long term and only about 2-3% return in the short term (the 4% indicated by the green diamond on the U.S. Equities bar, adjusted downward for the relative low riskiness of water utilities). However, since the graph on the right shows considerably higher returns than the bar chart, it may be that the longer-term outlook is better than the short-term outlook. Perhaps the bar chart represents the future, and the graph represents the past, but the wording above both of them casts doubt on this interpretation: "Ten-year annualized returns were 2.3% higher when

[3] *"2022 Long-Term Capital Market Assumptions"*, J.P. Morgan Asset Management, p. 7. *https://am.jpmorgan.com/content/dam/jpm-am-aem/global/en/insights/portfolio-insights/ltcma/ltcma-full-report.pdf*

starting in a negative real rate environment." The green line shows 10-year real borrowing rates heading into negative territory. Rothschild does not explain what the numbers in this table really mean. However, he may have alluded to them when he says "The Cost of Equity is the market-based return investors expect to earn on the market value of any given stock" whereas "[t]he authorized ROE is based on a snapshot of the COE."[4] If one is seeking a true COE that constantly varies, then individual numbers that suggest something different are just the wrong snapshot.

Q. IS THAT DISTINCTION USEFUL?

A. No. Although it is doubtless true that investors' true preferences and the stock market's reflection of them are constantly shifting, it is not accurate to conflate expectations of ROE with expectations of return on book value. Conflation of book value with COE and emphasis on a volatile COE creates contradiction.

Mr. Rothschild in effect states that investors want one ROE, so they should get another. While it is true that investors do not always get what they want, it is not true that they should get a lower return because they expect a higher one. Mr. Rothschild has an exhibit that indicates investors expect an ROE of over 11% in the next three to five years (Exhibit ALR5, p.2), but then concludes the true COE is between 8.15% and 8.27% under his Constant DCF, and between 5.08% and 5.80% under his Non-Constant DCF of (shown as 5.77% at Exhibit ALR-1) based on total returns (gains from buying and selling water company stock and from dividends paid; Exhibit ALR-3, pp. 2-3). Simply because many

[4] Garrett Direct, p. 3.

companies' earnings may rise faster than their book growth, does not mean that their ROE should be brought in line with book growth.

In fact, this "market-based" approach receives very little support from investor behavior. For the past ten years, water companies with publicly traded stock on U.S. exchanges saw a 14% compound growth rate in their stock prices; yet Book Value per Share ("BVPS") did not grow at this rate (Exhibits DHC-2 & -3).

Mr. Rothschild states, "Since the stock prices for the comparative companies are substantially higher than their book value, the return investors expect to receive on their market price investment is considerably less than the anticipated return on book value" (p.53). This statement may be mathematically true as Mr. Rothschild constructed his DCF, but it is also true that investors do not care about return on book value in itself because the money they receive from investments comes from stock-price increases and dividend payments. Investors who bought and sold stock in water companies really did make much money on their investment because stock prices rose faster than book value.

Q. WHY DOES IT MATTER WHAT PRICES HAVE DONE?

A. A key part of the DCF equation, D/P, the Dividend Yield, is driven by market forces in the form of (stock) Price. Dividend Yields for water companies have fallen sharply over the past ten years. If stock prices fall, then the yields will begin to rise. To project investors' gains from short-term book value growth alone ignores the impact on Dividend Yield, assumes investors already hold stocks, and disregards market forces. We see these problems in Mr. Rothschild's Non-Constant Growth DCF.

Q. DO YOU CONSIDER MR. ROTHSCHILD'S NON-CONSTANT GROWTH DCF ACCURATE?

A. No. Despite his denunciation of analysts and his accurate statements regarding the volatility of stock prices, he uses a constant Market-to-Book ratio and Value Line analysts' projections of book value and dividends. Value Line, however, does project an actual range of stock prices for larger stocks. Value Line contains advice at the end of its quarterly discussion of each larger stock. Far from being overly optimistic, these projections indicate that water company stocks will stagnate in price or even drop. In fact, Value Line advises: investors to *avoid* buying any water company stocks right now (Exhibit DHC-4).

2. MR. ROTHSCHILD'S CAP-M

Q. IS THERE A SPECIFIC OBJECTION YOU HAVE TO MR. ROTHSCHILD'S CAP-M ANALYSIS?

A. Yes. He attacks Value Line's Betas ("β")[5] on the grounds that Value Line's adjustments to this statistic are inaccurate and biased upward. Instead, he calculates his own βs. This decision is significant because β is a measurement of risk; it is used to adjust returns for risk in CAP-M analysis for regulated companies. This risk adjustment is downward, as regulated utilities are considered less risky than many other enterprises. Given the natural fluctuations of the market, however, it is not clear that Mr. Rothschild's calculations of this statistic are more reliable. The behavior of Value Line's water company βs has been consistent with the behavior of their stock prices and have risen in the past few years.

Q. HOW DOES MR. ROTHSCHILD CALCULATE HIS CAP-M RESULTS?

A. Mr. Rothschild uses varying Risk-Free rates and βs, depending on whether it is a spot or three-month calculation, whether he uses "forward βs" or current ones, and whether he uses

three-month U.S. Treasury Notes or 30-year U.S. Treasury Bonds. His βs vary from 0.59 to 0.74. His Risk-Free Rate varies between 0.13 and 2.11. His Risk Premium varies between 8.20% and 10.51%. These numbers produce CAP-M results between 6.39% and 8.39% ROE.

Q. DO YOU THINK THESE ARE REASONABLE ROE RESULTS?

A. No. They are numbers that might be used in a CAP-M calculation but there are eight different CAP-M results. The elaborate set of β time-periods and calculations notwithstanding, Mr. Rothschild's CAP-M results are based on very short-term data, namely three months for one set of figures and one day for another. No matter how many calculations of β, or any other statistic for the CAP-M, it is highly likely that short-term data will capture transitory, atypical, results in the current economic environment.

B. RESPONSE TO ROE ANALYSIS OF MR. GARRETT

Q. WHAT DOES MR. GARRETT HAVE IN COMMON WITH ROTHSCHILD IN HIS GENERAL APPROACH TO ROE?

A. First, neither Mr. Garrett nor Mr. Rothschild truly consider the market implications of Dividend Yield, the first part of the DCF equation. Second, Mr. Garrett, like Mr. Rothschild, believes in intrinsic value, which they both call "Cost of Equity." They share the belief that allowed ROEs are too high because they have exceeded the true Cost of Equity. In fact, Garrett presents a chart showing allowed ROEs, with Cost of Equity zigzagging up and down, substantially below allowed ROEs.[6]

[6] Garrett, Direct, Figure 2, p. 21.

Q. WHY SHOULDN'T A COMPANY'S TRUE COST OF EQUITY REFLECT ITS ROE?

A. While it is true that ROE should reflect actual capital costs, there are problems under both the DCF and CAP-M approaches in focusing, as Mr. Garrett does, on the short term. If we leave aside methodological issues and look at the economic situation, we can see that companies may not actually earn their allowed ROEs, for reasons that have nothing to do with their management. The recovery from the Great Recession has been a generally good economic time, with the exception of the COVID-19 period, but we face an era of increased borrowing costs and higher inflation that could saddle companies with sharply higher capital costs and expenses.

1. MR. GARRETT'S DCF

Q. WHAT INPUTS DID MR. GARRETT USE FOR HIS DCF?

A. He uses five-year annual growth rates for earnings and dividends for his proxy groups and averages them with estimates for growth rates going out to 2024-2026. He then selects an average stock price and average dividend from his proxy group to calculate a dividend yield.

Q. IS THERE A PROBLEM WITH MR. GARRETT'S APPROACH TO THE DCF?

A. Mr. Garrett's approach follows fairly standard DCF calculations, but it fails to recognize what has been happening to water companies over a longer stretch of time or likely changes in Dividend Yield. The time periods selected could have been longer and the estimate period used by Value Line overlaps past data, so some of his "future" is actually in the past.

2. MR. GARRETT'S CAP-M

Q. HOW IS MR. GARRETT'S CAP-M DOWNWARDLY BIASED?

A. His CAP-M is biased three ways: 1) he cites experts without explaining what they mean, but assuming they mean what he means; 2) he does not really use a CAP-M analysis to come up with a Market Return; 3) if he had used a true Market Return for the period(s) he mentions, his number would have been much higher. I will discuss each in turn.

Mr. Garrett relies on an "expert survey" in estimating equity risk premium (ERP) a and s but does not explain how these surveys were conducted or what the responses meant.[7] A look at one source Mr. Garrett cites reveals that merely quoting the source hides a good deal of uncertainty as to meaning.

Mr. Garrett cites the IESE Business School survey. The current survey discusses the concept of Risk Premium and classifies it into four types: Historical, Expected, Required, and Implied. The discussion notes that only the Historical Risk Premium is directly knowable, and then only one agrees on the time-period and other parameters. Regarding the Implied Risk Premium, the discussion states, "The estimates of the IEP depend on the particular assumption made for the expected growth (g). Even if market prices are correct for all investors, there is not an IEP common for all investors…" The discussion goes on to observe that, among published researchers, "Many papers in the financial literature report different estimates of the IEP with great dispersion," so there is an apparent lack of agreement on assumptions and inputs. The discussion notes that, "Most previous surveys have been interested in the Expected MRP, but this survey asks about the

7 Garrett Direct, pp. 53-54.

Required MRP." A scatter plot of survey responses shows that many respondents in 2021 were somewhat dispersed, with some showing a Risk-Free Rate under 1% and even 0%, while some others set their Risk Free Rate at 3% or higher.[8] Although none this directly contradicts the inference Mr. Garrett makes, it does suggest that there is far from uniform agreement among survey participants and, especially relevant in 2022, many assumptions based on a Risk-Free Rate that may have changed.

In the absence of knowing whether the sources he cites had a particular kind of Risk-Free Rate in mind, or whether they were even using something they considered a Risk-Free Rate, it is hard to know what these responses mean. Without more transparency, it is difficult to evaluate the numbers from these surveys. In effect, where Rothschild uses deflated βs, Garrett uses a deflated Equity Risk Premium.

Mr. Garrett uses a form of DCF analysis to compute Market Return for CAP-M. Unfortunately, he considers only dividends and buy-backs in the average cash yield and multiplies this cash yield by a growth factor based on earnings over the past five years. Under CAP-M, investors get their return from stock appreciation plus dividends and buy-backs. Inconsistently, Garrett counts the portion of stock appreciation from buy-backs but not any other part of actual stock appreciation. In effect, he caps the growth in stock price at the level of earnings growth.

The past five years or six years of actual stock appreciation reveal a much higher return from stock price appreciation.[9] Readily available data from Yahoo!Finance shows

[8] Pablo Fernandez, Sofia Bañuls and Pablo F. Acin, *Survey: Market Risk Premium and Risk-Free Rate used for 88 countries in 2021,* IESE Business School.

[9] Garrett Direct, pp. 55-56.

that the S&P 500 Index stood at 2,059.74 on March 1, 2016, and rested at 4,363.49 on March 1, 2022.[10] The Compound Annual Growth Rate (or "geometric mean") of these numbers reveals that the S&P 500 Index grew at 13.3% and the five-year growth was about the same. The simple average of the yearly growth for the same years is 16.05%. These numbers do not count dividends and buybacks of stock, but only stock prices, so they understate total returns. Mr. Garrett, however, concludes that the growth rate for stocks is 7.5%. Since earnings from dividends and buy-backs would have raised the 13.3% number even higher, his result is lower than immediate past market behavior would indicate. By taking selected parts of the DCF and CAP-M in his CAP-M analysis and capping stock growth at earnings growth to predict future returns biases he produces downwardly biased results.

C. ALTERNATIVE ANALYSIS

Q. WHAT DO YOU PROPOSE INSTEAD OF THE APPROACHES OF ROTHSCHILD AND GARRETT?

A. The three approaches I employed are the Discounted Cash Flow ("DCF") method, the Comparable Earnings Method ("CEM"), and the Capital Asset Pricing Methodology ("CAP-M"). I employed these three approaches and found ROE's of: 7.75%, 9.11%, and 9.53%, respectively (exhibit DHC-1). Economic circumstances, which I will discuss later in my testimony, dictate my favoring 9.35% at the upper end of my range.

Q. WHAT CONSIDERATIONS GUIDED YOUR ANALYSIS?

10 Yahoo!Finance; downloaded March 4, 2022

A. The impacts of risk and time upon investments require that compounding of investment must be recognized. The disappearance of firms whose earnings become zero and the persistence of others, sometimes called "survivorship," must be recognized. For this reason, compounded returns, which are lower than non-compounded average ones, should be used. Such returns recognize risk in that they do not overrate recovery from declines in returns. Simple averages or mean returns do overrate recoveries after declines. For example, if one's investment declines by 50% in value one year and increases by 100% the next, the net change is 0%, but a simple average deceptively indicates a growth of 25%. In the notional world of ROE, however, a simplifying assumption treats investments as very long-term, almost as perpetuities. A similar but less explicit assumption governs CAP-M. Such an assumption ignores real-world fluctuations in investments and individuals. Simple averages of growth do recognize such fluctuations. The best compromise is to use both methods of calculation, but with caution and attention to one's objective in making the mathematical calculation.

Q. DID LEGAL STANDARDS GUIDE YOUR ANALYSIS?

A. Yes. There are famous cases concerning regulation of water-company rates, which most ROE witnesses cite. The United States Supreme Court has established legal standards for setting allowed returns for regulated utilities:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the

> utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its duties.[11]

A second noted case refined the above standard:

> The fixing of "just and reasonable" rates, involves a balancing of the investor and consumer interests…. From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital cost of the business. These include service on the debt and dividends on the stock…. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and attract capital.[12]

Q. HOW ARE THESE STANDARDS INCORPORATED IN YOUR ANALYSIS?

A. They permeated my methods. I examined companies that are similar to the applicant company. I adjusted calculations downward to reflect the reduced risk of regulated water utilities. I considered adequate return in light of economic circumstances. I used multiple models so that, if one were currently overly sensitive to a factor, the use of others would offset it.

1. DCF METHOD

Q. WHAT IS THE BASIC PREMISE OF THE DCF?

A. The DCF method assumes that cash flows manifest themselves through dividends and anticipated future dividends. The cost of equity derives from the value of a stock seen through the future cash flows that produce these dividends. John Burr Williams in his book, The Theory of Investment Value set forth a Dividend Discount Model for valuing

[11] *Bluefield Water Works & Improvement Company. v. Public Service Commission of West Virginia,* 262 U.S. 679, 692-3 (1923).

[12] *Federal Power Commission v. Hope Natural Gas Company,* 320 U.S. 591, 603 (1944).

stocks. About 20 years after Williams' book, Myron Gordon reverse engineered Burr's valuation model to apply it to the cost of equity. Ten years later, Gordon used the DCF when he testified before the Federal Communications Commission as to the appropriate ROE for regulated telephone companies.[13]

Q. WHAT ARE THE ASSUMPTIONS UNDERLYING THE DCF?

A. In the DCF interpretation, dividends represent the only sure return for an investor. Stock prices may fluctuate and are speculative, but announced dividends are certain. Future dividends, given the time value of money, have to be discounted and so are worth less than current ones. At the same time, company growth enables companies to raise their dividends. These basic assumptions drive the DCF model and have particular relevancy to this case, as I will discuss later.

One way to think of the DCF is that it is a "bird-in-hand" theory of ROE: the investor knows that a company has declared dividends, so income is guaranteed. What the investor does not know is how much a company will grow to pay future dividends. As a simplification, the DCF model assumes constant growth, reinvestment of earnings, and an infinite time horizon. Although these assumptions can be challenged as unrealistic and must be relaxed to recognize medium-term conditions, they provide an intuitively appealing way to determine an appropriate ROE.

Q. WHAT ARE THE PRACTICAL IMPLICATIONS OF THESE ASSUMPTIONS?

A. Investors value each stock by its potential discounted cash flow in perpetuity and they use implied growth to determine future value. An investor's equity return from a company, its

[13] F.C.C. Docket 16258, 1966.

ROE, is the amount of money from dividends paid in a year, divided by the price of the company's stock, plus expected growth. A stock's annual dividends divided by its price is dividend yield. The simplified DCF equation is therefore:

$$K = DIV/P_0 + g,$$

where K is the cost of equity (ROE), DIV is the annual current dividend, P_0 is the price of the stock before the first quarterly dividend is paid, and "g" is future growth. Some analysts substitute the terms "br + sv" for "g".

Q. WHAT IS "G"?

A. "Growth" or "g" in the equation is the increase in the ability to pay dividends. A direct link to stock prices or any one aspect of company performance does not exist, but "g" does indicate future performance. For these reasons, "g" must be detected indirectly.

Q. HOW DID YOU MEASURE FUTURE GROWTH ("g")?

A. I first selected a proxy group of companies with traded stock reported by Value Line. These companies are similarly situated to KIU or its parent and share approximately the same risk. They are like a composite water company or a notional typical water company.

I next used four indicators of growth: the change in sales/revenue, the change in Earnings per Share ("EPS"), the change in Book Value per Share ("BVPS"), and the change in Dividends per Share ("DPS"). For each of these indicators, I gathered historical information for different time periods, more and less recent, and I combined them with stock analysts' estimates of the future changes in each indicator (Exhibits DHC-3, -5, -6, -7). For each time period and each set of estimates, I calculated the mean and median change and averaged them. I then took Value Line's and readily available estimates from

Zacks or Yahoo! and calculated the future growth of these factors. The results are summarized in DHC-8.

Q. WHAT OTHER ADJUSTMENT DID YOU MAKE IN YOUR DCF CALCULATION?

A. The forward Dividend Yield only reflects what is knowable from dividend declarations (announcements) by companies and from current stock prices. An investor hopes for a dividend increase, nor is that hope unreasonable, as my DPS exhibit shows (Exhibit DHC-7). An investor counts on future dividends over the four quarters of dividends. Another way of expressing the investor's view is that he or she faces one-quarter of dividend increases unknown at the beginning of the first quarter of holding a stock, two-quarters' increase unknown at the beginning of the second quarter of holding the stock and so forth. If we add this series of unknown increases quarter-by-quarter, we wind up adding ¼, $^{2}/_{4}$, ¾, and $^{4}/4$, which equals 1½, or half-again or 50% more yield than at the start of the year. By convention, multiplying the yield by one-half of g is deemed to reflect investors' anticipation of growth in Dividend Yield. The modified DCF formula, therefore, looks like this:

$$K = (DIV/P_0 * (g/2)) + g$$

My DCF result reflects this slight adjustment to Dividend Yield (DIV/P_0) (Exhibit DHC - 8)

Q. WHAT CONCLUSIONS DO YOU DRAW FROM THIS DATA?

A. Contrary to Mr. Rothschild's assertions, analysts were far from optimistic about growth in Sales, EPS, and BVPS. This pessimism is in line with their advice not to buy stock in water companies. Second, the exception to this pessimism was estimated DPS. There is a

kind of race between the increases in stock prices and dividend payments, with the latter unable to keep up with the former. If investors begin to sell their water-company stock, a falling price will begin to reverse the decline in Dividend Yield.

Q. WHAT SUPPORT DO YOU HAVE FOR THE DECLINE IN YIELDS AND THEIR LIKELY RECOVERY?

A. A comparison between the highest dividend yield and the lowest among the proxy-group companies reveals that yields are now about half what they were a few years ago (Exhibits DHC-9 & -10). Since regulated companies are usually considered safer than others, the decline in dividend yields is startling but ignored by Mr. Rothschild and Mr. Garrett. This decline happened despite the companies' raising their dividends at a fairly rapid clip approaching 7% each year (Exhibit DHC-7). The fall in yields happened because of a change in the denominator of the formula for yield: Dividend/Stock Price. A run-up in stock prices shrank the yield, even as companies worked to increase the denominator, dividends.

There is some indication that the proxy-group stocks may be overvalued; the relative price/earnings ratios ("P/E") are above 1 (see Exhibit DHC-4) for all of them, meaning that the prices of the water companies compared to their earnings is higher than average P/E of all the stocks in the market. In the current environment, stock prices generally are likely to fall, which should raise dividend yields. Among the proxy-group, however, β's are lower than the market, which is to say, they are below "1." The proxy-group companies are therefore likely to fall in share price more slowly than the overall market. At the same time, analysts estimate, DPS will continue to grow among the companies. This will be a major financial challenge for these companies.

Q. WHY DO YOU SAY THAT INCREASING DPS WILL BE A MAJOR CHALLENGE?

A. The cost of debt is likely to rise in an environment of inflation (see Economic Environment below), but water companies will need to maintain DPS growth, although the growth rate of Revenue, BVPS, and EPS are likely to fall (Exhibit DHC-3, -5, -6, -7, p.2 of each). At the same time, water companies will have to continue to compete with other, non-regulated companies to attract investment. In this economic environment, dividend yield is likely to be central in this competition. I believe that the DCF/CAP-M Proxy Group companies are overpriced, as evidenced by their relative Price/Earnings Ratio (Exhibit DHC-4, at top of each page). It is unlikely that water companies will adjust to a market correction as quickly as the overall market due to the nature of their business and their low β's. Thus, water companies will face continued pressure as borrowing costs rise and Dividend Yield adjusts slowly. If water companies' stock prices do not fall quickly enough and estimates of their future Sales and EPS figures are correct, their retention rate will drop as they continue to pay out increased dividends. Eventually, their prices will fall enough to raise their Dividend Yields and they will be able to reduce their rate of dividend growth and their retention rate will recover, allowing BVPS to recover.

Q. WHAT WOULD BE THE EFFECT ON DCF CALCULATIONS IF WATER COMPANIES SUCCESSFULLY REGAINED THEIR FORMER DIVIDEND YIELDS?

A. The DCF results would be likely to rise significantly. Even if they do not fully recover their former yields, a significant recovery would be an additional 100 basis points (1 percentage point) added to the DCF. Since analysts' short-term estimates affect my result,

any recovery after a stock market correction is likely at least to maintain the current forward yield, even if DPS growth slackens, although that is not expected (Exhibit DHC-7). As interest rates rise, companies may have to rely more on equity, too, which will require attraction of capital through dividends. At the same time, water companies will need to increase their assets they use to bring a return, but company executives will find they are squeezed between maintaining dividend payout and the need to retain more earnings to devote to maintaining and replacing their assets. Thus, there will be additional pressure on companies to maintain BVPS, which is directly related to my CEM analysis.

2. CEM ANALYSIS

Q. WHAT IS THE BASIC PREMISE OF THE CEM?

A. The CEM seeks to find similarly situated companies and infers earnings from the trends among those companies. The CEM tends to be based on book value. Although it is the oldest model for regulated utilities, CEM has no specific methodology.

Q. IS IT INCONSISTENT TO USE BOOK VALUE BUT TO CRITICIZE A DCF BASED UPON BOOK VALUE?

A. No. My CEM presupposes no immediate and direct link between book value growth and cash flow or appropriate ROE. It does posit that earnings will follow book value growth over time, but without specifying the precise link. It also uses companies that are neither regulated as utilities nor as natural monopolies.

Q. HOW DID YOU PERFORM YOUR CEM ANALYSIS?

A. To ensure comparability, I chose companies comparable to my Proxy Group in that they paid dividends, had β's in the same range, had growing book value, and were not regulated

utilities. These characteristics ensured general comparability. I applied these criteria for five-year book value changes and for projected five-year changes. This process generated two CEM proxy groups, one retrospective and another prospective. I then calculated mean and median book value growth rate for the Retrospective CEM Group (Exhibit DHC-11) and the mean and median projected book value growth for the Prospective Group (Exhibit DHC-12). I averaged the mean and median for each group and then averaged the two groups' averages. My Retrospective CEM result was 8.29% and my Prospective CEM result was 9.93%. The overall result was an indicated growth rate of 9.11%.

Q. WHAT IS YOUR ASSESSMENT OF THIS RESULT?

A. Any approach to CEM involves some degree of judgment about method, since there is no standard methodology. The growth in book value has the advantage of being relatively straightforward to obtain. On the other hand, the exact relationship between assets and returns may vary considerably across sectors and time. The strength of the relationship may wax and wane. In short, CEM may vary in predicting ROE. Since my CEM result is in the middle of my range, however, these concerns are minor.

3. CAP-M

Q. WHAT IS THE BASIC PREMISE OF THE CAP-M?

A. CAP-M's fundamental logical underpinning is two-fold. First, an investment with any risk must bring more return than a riskless one. This requirement for investments is called the "hurdle rate," because it is a hurdle that the possible investment must clear before bringing a return that warrants making it an actual investment. Second, risks specific to a company can be neutralized by investing in a diversified portfolio. Since company-specific risk is

diversifiable, the only risk for which an investor will be compensated is non-diversifiable risk, which is derived from a stock's riskiness compared to the overall market's riskiness.

Q. WOULD YOU PROVIDE A PRACTICAL BUSINESS EXAMPLE OF THE APPLICATION OF THE HURDLE RATE?

A. Suppose a Chief Executive Officer ("CEO") came to a high-level manager and said that the company's largest warehouse had become too small. After considerable time and effort, the manager returned with a plan for a new warehouse. Suppose further that the CEO responded, "After spending all that money on the new warehouse, we would realize only an X% return, but we can get that by investing in low-risk bonds without conducting any business at all. Go find an alternative that will bring a higher return." The manager would have to beat the hurdle-rate return of X%. Note that, in this example, the CEO did not propose buying bonds, but instead used their return as a benchmark.

Q. WHY USE A VERY LONG-TERM BOND?

A. Data is often "noisy." The variation in stock returns has too many causes to isolate them all, but we know that, over time, temporary phenomena disappear. Then too, the larger the number of datapoints, the less the error rate, especially if the data points are over substantially different times. The term of the Risk-Free instrument, therefore, should be long in order to match the period of the data to the extent possible, whether individuals, such as the CEO in my example, would actually use its rate. With a certain aversion to risk there may also be a need to recognize that business decisions may involve building in a cushion, a higher minimum hurdle rate represented by long-term bonds, in case potential returns were over-estimated.

Q. WHAT WOULD BE AN EXAMPLE OF DIVERSIFYING COMPANY-SPECIFIC RISK AWAY?

A. Suppose that an investor wants to invest in a company with highly specialized software that promises to have widespread application if it is perfected. The investor researches everything a layman can about this software and even asks a software expert who tells him that she believes the software will become a huge success, if certain problems are resolved. She cannot predict for him whether those problems will be solved. The investor realizes that the investment will be very risky but potentially very rewarding. To reduce the overall risk of investments, the investor buys some stocks with low but steady returns, mixed in with some stocks with somewhat higher, but less certain, returns. The investor then buys the risky stock. Company-specific risk has been diversified away.

Note that there is still non-diversifiable risk associated with a company, even in the context of a portfolio. This risk, however, can be averted. An investor with a portfolio desires the reassurance that safer stocks will not lose value as fast as the overall market. In the implementation of my CAP-M, the statistic β helps accomplish this goal. β can assure investors that some of their portfolio will not lose value as fast as the overall market. The same investors know that their lower-risk stocks will not rise as fast as the overall market and accept this slower growth as the price to be paid for safety.

As regulated monopolies, water companies have lower βs. In the past few years their βs have risen, along with their P/E ratios. Still, their βs remain below "1" (Exhibit DHC-13).

Q. WHAT STEPS ARE NECESSARY TO IMPLEMENT THE BASIC PREMISES OF CAP-M TO DISCOVER AN APPROPRIATE ROE?

A. The first step is to find the risk-free rate ("R_f"). A federal government bond represents as close to a risk-free investment as possible, so the only questions left to decide are what the term of the bond should be and whether prospective or current rates should apply. I use a 30-year Treasury bond since CAP-M has an implicit assumption of perpetuity. I use a prospective rate, since I believe that at least some investors hold securities long enough or plan their investments long enough in advance to ensure that the hurdle rate is not too out-of-date. I used the year-and-a-half forward estimates of the 30-year Treasury bond yield from the *Blue Chip* periodical (Exhibit DHC-14).

The second step is to find the market rate ("R_m"). It has been the practice to use a book entitled Stocks, Bonds, Bills, and Inflation, published as a yearbook. In recent years the ownership of the data has changed hands and it is not reported in the same manner. There have been changes made to the compilation of long-term market returns.

Particularly challenging, given this change, are the twin threats to validity: survivorship bias and the exaggeration of stock returns inherent in using the arithmetic mean (discussed under General Considerations above). Averaging arithmetic and geometric means of both the largest and smallest companies produced an average return of 12.63%. This result recognizes the possibility that there may be some difference in the behavior of larger and smaller stocks and some people or investment entities may successfully time the market and temporarily realize arithmetic returns. Its drawbacks are that it does not recognize survivorship bias and the exaggerations of returns inherent in using arithmetic mean. The safest way to avoid these twin threats, however, is to take only the geometric mean total return of large stocks, which is 10.2%. That approach, however,

eliminates any differences in the behavior of medium-sized and small stocks. I resolved this conflict by averaging the extremes. The result was $R_m = 11.41\%$ (Exhibit DHC-1).

The third step is simple. The risk-free return is subtracted from the market return, so:

$$R_m - R_f \equiv 11.41\% - 2.70\% = 8.71\%.$$

This result is the Equity Risk Premium ("ERP").

The fourth step is to adjust the ERP to recognize water companies' non-diversifiable risks. Using the same companies from my DCF analysis, I calculated the mean and median β among these companies (Exhibit DHC-13).

β, technically known as a covariance, has a very simple, intuitive meaning. The whole market's fluctuation has a β of "1.00." A stock with a β of "1.2" changes 20% more than the stock market and a stock with a β of "0.80" changes 20% less than the whole market. For example, if all stocks decline in value by $1.00 per share, then a stock with a β of "0.80" will decline by only 80 cents. By the same token, if the market rises $1.00 a share, the stock with a β of "0.80" will rise only 80 cents. Since it is plausible to assume that investors are risk-averse, a stock's β performs the useful service of informing them of potential for loss, as well as for gain. The adjusted ERP is the ERP multiplied by β (Exhibit DHC-1).

The fifth and last step of calculating ROE under CAP-M is to add the Adjusted ERP to the R_f with the result of 9.60%.

Q. WHY DID YOU USE VALUE LINE βs?

A. The criticism that the "Blume adjustment" has little empirical support, while possibly accurate in some sense, does not make it invalid. The issue is whether βs tend to regress

to the mean, in this case to "1," which represents how much all stocks vary. I have noted that water company stocks have risen rather quickly and that they have above average P/E ratios. These indicators are consistent with higher βs and those that Value Line reports for water companies have risen. Value Line has reported βs using its current methodology for years, so it must be useful to subscribers and Value Line must think it accurate.

Q. WHAT SUMMARY OBSERVATION DO YOU HAVE ABOUT YOUR CAP-M RESULT?

A. The ERP is currently very high and likely to fall. If the rather high β's fall the Adjusted ERP will fall. The equation for CAP-M reveals the components of this potential process and summarizes the steps I have discussed:

$$K = R_f + (\beta * (R_m - R_f))$$

where K is the Cost of Capital or ROE; R_f is the Risk-Free Return, in this case, the 30-year Treasury Bond forward rate; R_m is the long-term market return; and β is the covariance or how much a stock moves compared to the overall market. The last set of parentheses is the ERP and the expression in the wider set of parentheses is the Adjusted ERP. I believe that the main drivers of CAP-M are currently the R_f and β, because β's of water companies have risen in recent years and – barring a recession – interest yields on 30-year Treasury bonds are likely to rise to the level predicted by *Blue Chip*.

Q. GIVEN YOUR CONCERNS, WHY DO YOU RECOMMEND THE UPPER END OF YOUR RANGE, SINCE YOUR CAP-M RESULTS IS YOUR HIGHEST?

A. Due to factors set forth in my discussions of my DCF and "Economic Conditions," I believe that the DCF results will rise. I note that I do not recommend the very top of my range, as I believe that CAP-M will ultimately fall. Initially I expect a "flight to safety" of water

company stocks, and then a fall in water-company β's as investors' appetites for more return and tolerance of more risk returns. Investors looking for more certain returns may realize that rising Dividend Yields from water companies make them a good "buy-and-hold" choice and βs will fall, as people looking for higher but less certain returns look elsewhere. For this reason, I would not consider my CAP-M result the best indication of appropriate ROE, but instead somewhere between it and my CEM result. Furthermore, my conclusions do not rest solely on my ROE analysis, but rather also upon the economic environment.

V. ECONOMIC CONDITIONS

Q. WHAT ECONOMIC CONDITIONS ARE RELEVANT TO THIS CASE?

A. Inflation stands out as the central economic condition at present. Inflationary pressures have arisen in the context of low unemployment and high nominal economic growth. This combination makes it almost certain that the Federal Reserve will raise the Federal Funds Rate target at the next Federal Open Market Committee ("FOMC") meeting scheduled for March 15-16. Moreover, several further increases seem likely. Indications are that the underlying factors responsible for inflation will not be especially tractable. Jerome Powell, Chair of the FOMC and of the Federal Reserve Board of Governors has identified two factors, which are well known to anyone following economic events: supply-chain issues and a tight labor market. Powell has indicated that the former should begin to start to improve later this year, but that the latter will improve "over time" (Exhibit DHC-17).

Q. WHAT OTHER EVIDENCE IS THERE THAT INFLATIONARY PRESSURES WILL PERSIST?

A. Aside from supply-chain issues, which Powell believes may gradually begin to ease later this year, there are reasons to believe that a tight labor market may endure for some time. We know that participation in the labor market has not grown and even shrank during the latest round of COVID-19. We also know that the population of our country is growing at a historic low rate.[14] Last year, our population grew at only 0.1%. We know, too, that immigration, which could supply additional labor is a divisive political issue and, in any event, relatively low. While these factors are in play, we continue to age and Americans age out of the work force, with increased labor-force participation decreasingly likely to make up the difference. The following simple table shows slowing growth in labor force participation rates, which, one must keep in mind, are occurring on top of very slow population growth:

Age	Compound annual rate of change, 2000-10	Compound annual rate of change, 2010-20	Compound annual rate of change, 2020-30
25 to 54	0.2	0.0	0.5
55 and older	4.9	2.4	1.2

Source: BLS Table 3-1

Q. WHAT WILL BE THE CONSEQUENCE OF PERSISTENT INFLATIONARY PRESSURES?

[14] https://www.census.gov/library/stories/2019/12/new-estimates-show-us-population-growth-continues-to-slow.html
https://www2.census.gov/programs-surveys/decennial/2020/data/apportionment/apportionment-2020-map03.pdf
https://www.census.gov/library/stories/2021/12/us-population-grew-in-2021-slowest-rate-since-founding-of-the-nation.html

A. Higher interest rates may tame inflation, but the persistence of inflationary tendencies – barring an undesirable recession to counteract them – will require persistently considerably higher interest rates and a reduction in the Federal Reserve's $8.8 trillion balance sheet in government and mortgage securities. The higher inflation we are seeing has led to a belief among financial analysts that there ultimately will be a boost of one to two percentage points in the Federal Funds Rate set by the FOMC. It is quite likely that Long-Term Debt for firms will rise significantly.

Q. WHAT COULD BE THE CONSEQUENCES OF ECONOMIC CONDITIONS FOR KIU IN REGARD TO CAPITAL COSTS?

A. KIU did not state its capital structure as part of its application. We know that the Costs of Debt and of Equity are likely to go up. I have explained how falling stock prices will boost Dividend Yield and how increased interest rates will boost the hurdle rate.

Q. IN LIGHT OF YOUR DISCUSSION OF ECONOMIC CONDITIONS, DO YOU ENDORSE AN ROE BASED UPON KIU'S MARGIN?

A. No. Since there is no set standard for assessing operating margin, I had to assess the implied ROE based upon KIU's margin, which is 11.24%. I would favor somewhere around 9.35%, and a low end of 8.43%. The mid-point between my CAP-M and CEM produces 9.35% and the mid-point between my DCF and CEM produces 8.43%.

Q. WHY DO YOU THINK YOUR ROE, ESPECIALLY YOUR FAVORING THE UPPER PART OF YOUR RANGE, IS APPROPRIATE?

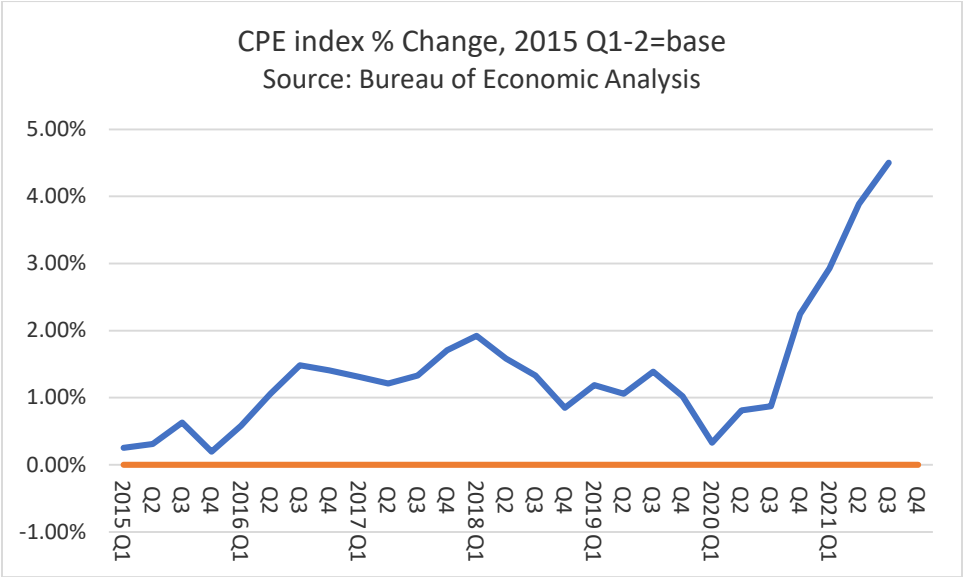
A. One word explains my position on this question: inflation. This factor has consequences both indirectly through its impact upon capital markets and directly through its reduction in real returns to investors. Regarding the latter point, I note that, while investors tolerate

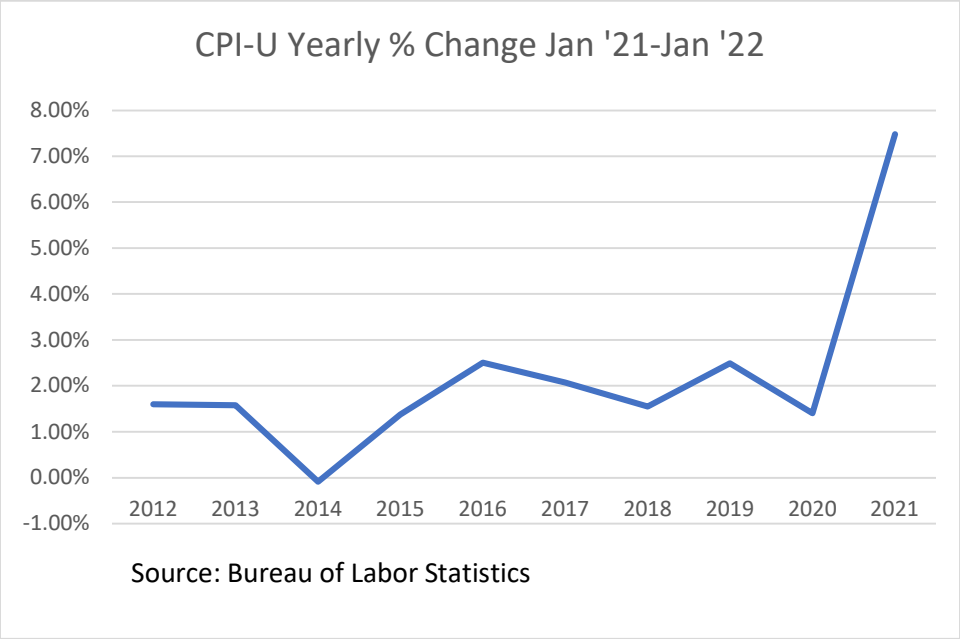
some "baseline" of inflation, when inflation rises above that baseline, the impact on returns becomes obvious and investors begin to look at their real returns (reduced by inflation) and away from their nominal ones (with inflation included). That reasoning underpins my conclusions and my testimony.

VI. INFLATION AND MONETARY POLICY

Q. WHAT IS THE CURRENT SITUATION OF THE U.S. ECONOMY?

A. It is growing rapidly, partly from earlier federal government stimulus spending and partly from a rebound after the worst of the COVID-19 pandemic. At the same time and partly related to this fast growth, inflation is at a 40-year high. There are two commonly used measurements of inflation, the Consumer Price Index – Urban ("CPI-U") and the Personal Consumption Expenditures index ("CPE"). The Federal Reserve pays particular attention to the latter index. The CPE is growing at 4.5% annually and the CPI-U is growing at an annual rate of 7.5%:





The Federal Open Market Committee ("FOMC") will meet this month and, in all probability raise the Federal Funds Rate, which is likely to increase interest rates generally. Anticipation of the almost certain FOMC action is already causing an uptick in mortgage rates. Jerome H. Powell, head of the Federal Reserve Board and the FOMC, has stated that he sees inflation lessening in the latter part of this year, but is quite concerned that it is well above the FOMC target rate of 2% (Exhibit DHC-17).

Q. HOW LIKELY AND HOW LARGE WILL THE RATE INCREASES BE?

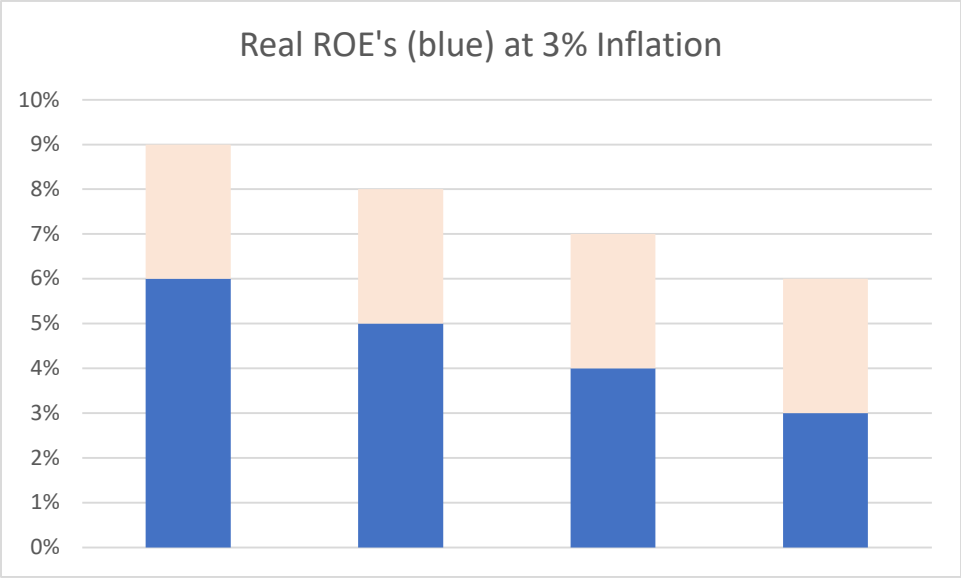
A. Economists at J.P. Morgan Chase now believe that there will be a series of nine increases of 0.25% each, for a total increase to 2.25%. The futures markets have priced in a 64% chance of an increase to 0.25% next meeting and a 36% chance of an increase to 0.50% at the next FOMC meeting this month.[15]. Currently the target rate spread is 0%-0.25%.

[15] https://www.barrons.com/articles/jpmorgan-now-expects-nine-straight-fed-rate-increases-until-march-2023-51645298667

Q. HOW DOES THE ECONOMIC SITUATION RELATE TO YOUR ROE ANALYSIS?

A. There are several ways. The 30-Year Treasury benchmark for CAP-M is likely to increase, which will lower the ERP. If higher borrowing rates lead to a slump in the stock market, water company βs will fall, too, leading to a decrease in the Adjusted ERP and lowering my CAP-M result. A fall in the overall stock market might also lower P/E ratios and cause the prices of water company stocks to fall, with the consequence that Dividend Yield for water companies will recover, raising my DCF result.

As far as awarded ROEs are concerned, even a more moderate 3% inflation would seriously erode their value. Concurrently, companies would be facing inflationary impacts on their operations. I have a simple stacked bar chart showing what nominal ROEs would be under 3% inflation:



As the chart shows, a 9% ROE based on nominal Dollars, becomes 6% and a 6% becomes 3%. I chose 3% as a more conservative number compared to current inflation and the

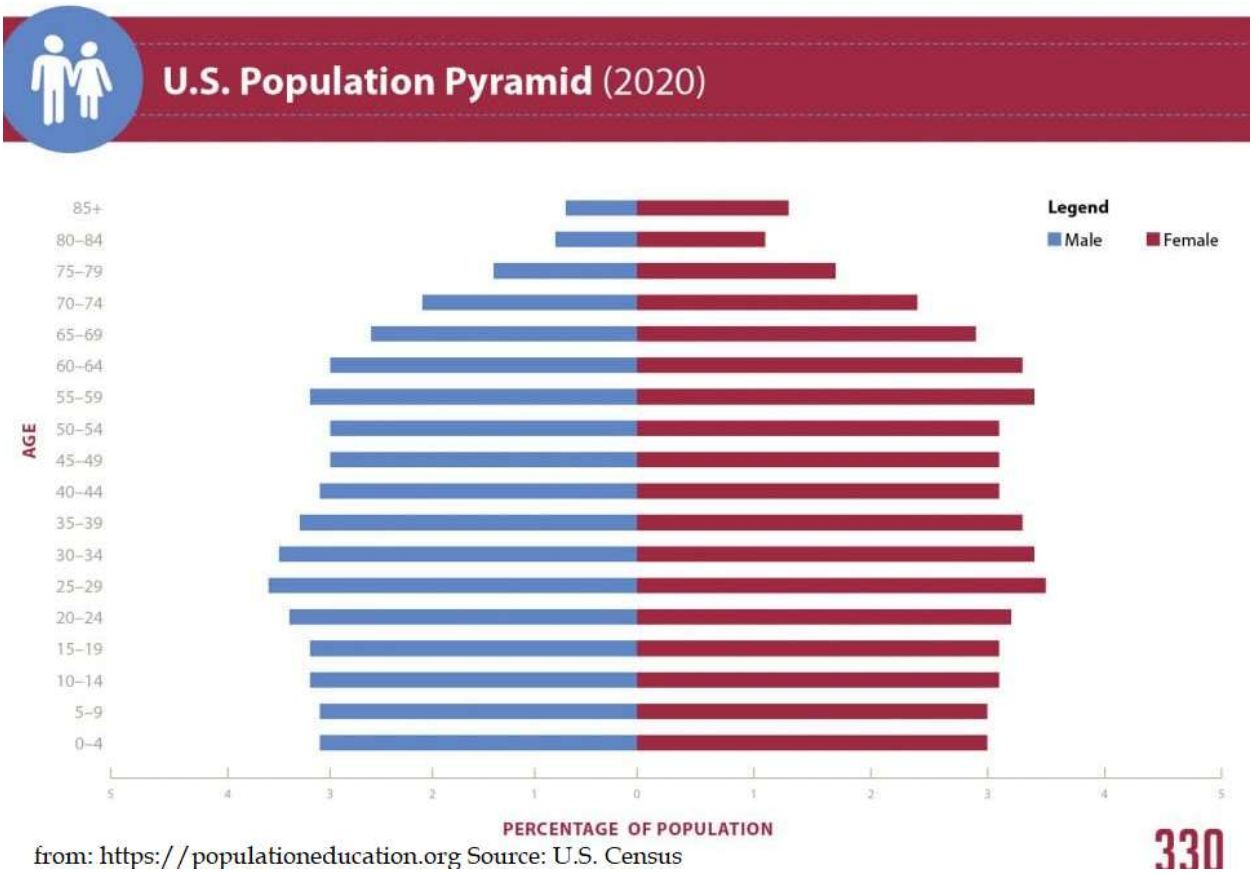
inflationary trend. Note that 30-year Treasury Bonds would bring a negative real return at their current yield. Although *Blue Chip* may have had overly high estimates from various causes in the past, using a forward yield does not seem unreasonable in current economic conditions. *Blue Chip* economists also seriously underestimated inflation.

Q. WHY WOULD INFLATION PERSIST, RATHER THAN BE TRANSITORY?

A. Inflation will doubtless abate as some of its causes subside. If, as we all hope, we will leave the most pernicious effects of COVID-19 behind, pent-up demand will become satisfied. Relatedly, supply-chain issues may ease, as demand does. A tight labor supply, however, may last a good bit longer.

Q. IF PEOPLE GO BACK TO WORK, WHY SHOULD THE SUPPLY OF LABOR REMAIN TIGHT?

A. Many people will return to work and some more might return. At some point, barring more immigration, will we run out of people because of the demographic profile of the U.S.:



Our population is aging with a slightly smaller number of people entering prime working age from 25-65 and a slightly lower labor participation rate among workers over 65.[16] Immigration is a sensitive political issue, so it is far from clear where we will get additional workers. The price of labor is likely to continue to rise, although increased mechanization and information technology may offset this effect.

Q. WHAT CONCLUDING OBSERVATIONS DO YOU HAVE?

A. We have about a year to see how our economy adapts to changed economic circumstances. If inflation above the Federal Reserve's target 2% persists, even as we see the $8.8 trillion Reserve holdings unwind, we may expect companies that issue dividends to face pressure

[16] see BLS table already discussed.

to maintain them. At the same time, borrowing rates will begin to be felt by all companies and they may have to rely more on Equity to finance themselves. In this context, the DCF may rise; water companies will defer investments as their retention rate falls. All but the highly leveraged and otherwise vulnerable companies should be able to manage this transition. It would not be surprising if water companies' P/E and MTB ratios were to fall. If βs and the ERP fall, we will see the CAP-M numbers fall. All these reasons lead me to recommend my "inner range."

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.